

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : **SEIKO EPSON CORP**

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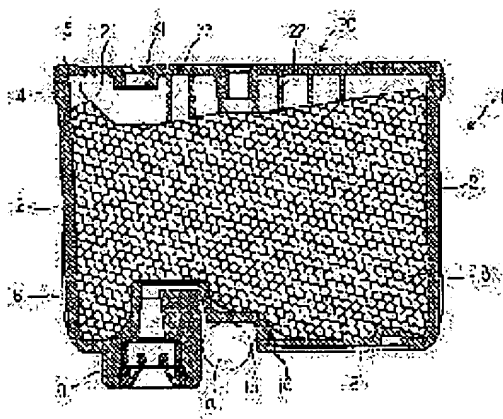
(72)Inventor : **KOBAYASHI TAKAO  
MIYAZAWA HISASHI  
KOIKE HISASHI**

**(54) INK CARTRIDGE**

**(57)Abstract:**

**PROBLEM TO BE SOLVED:** To form an ink tank having rigidity of a soft resin material.

**SOLUTION:** Reinforcing ridgellnes 6 are provided to the corner parts of a peripheral wall 2 and an opening end edge 4 is made thick to mold an ink cartridge having sufficient rigidity from flexible polypropylene having no air permeability and, further, shape holding ribs are provided outside the vertical ribs 21 of the inner surface of a lid member 2 to suppress even the deformation of a cartridge at a time of oscillation welding.



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**CLAIMS**

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[Claim(s)]

[Claim 1] The ink cartridge characterized by having projected in one and forming the projected part for \*\* forms which protrudes on a longitudinal direction the protruding line which presses the filled form, and contacts the inside of the lid which closes opening of the above-mentioned ink cartridge body on the outside of this protruding line at the medial surface of the above-mentioned opening edge while the ridge for reinforcement-cum-positioning was protruded on the peripheral wall corner of the ink cartridge body fabricated with the elastic synthetic-resin material and the opening edge was formed thickly.

[Claim 2] The ink cartridge according to claim 1 characterized by forming the above-mentioned ink cartridge body with polypropylene.

[Claim 3] The ink cartridge according to claim 1 characterized by the thick twist of other peripheral wall sides forming thickly the thickness of the peripheral wall side of the sense which intersects perpendicularly with the oscillating direction at the time of welding of the above-mentioned ink cartridge body.

[Claim 4] The ink cartridge according to claim 1 characterized by having turned at least one ridge for positioning in the wearing direction of this ink cartridge body, and forming it in the peripheral face of the ink feed zone which protruded on the base of the above-mentioned ink cartridge body in one.

[Claim 5] The ink cartridge according to claim 1 characterized by forming in one the frame which makes the shape of a rectangle to the perimeter as encloses the ink feed zone of the shape of a cylinder which protruded on the base of the above-mentioned ink cartridge body.

[Claim 6] The ink cartridge according to claim 1 or 5 characterized by forming in one the frame which makes the shape of a rectangle to the perimeter as encloses this each ink feed zone while combining mutually each ink feed zone which protruded on the base of the ink cartridge for color printers with the rib.

[Claim 7] The ink cartridge according to claim 1 or 5 characterized by forming the notch which misses air in case a film is stuck on the edge of the above-mentioned frame.

[Claim 8] The ink cartridge according to claim 1 characterized by forming the crevice of the sense which is made to approach an ink feed zone and intersects perpendicularly with a longitudinal direction on the base of the above-mentioned ink cartridge body.

[Claim 9] The ink cartridge according to claim 1 characterized by an end cutting an air bleed hole and the slot of the shape of a maze to open for free passage in the top face of the above-mentioned lid.

[Claim 10] The ink cartridge according to claim 1 or 9 characterized by enlarging the cross section of the slot of the overlap part of the heater chip for film welds among the maze slots on

the above.

[Claim 11] The ink cartridge according to claim 1 or 9 characterized by making the slot of the shape of a maze prepared in the top face of the above-mentioned lid with a configuration common to all the lids that are adapted for various kinds of ink cartridge bodies which differ in ink capacity.

[Claim 12] The ink cartridge according to claim 1 characterized by turning the above-mentioned lid in the exfoliation direction of a wrap film, having projected and locating the one of the end discharge holes of each maze slot on the above prepared in the lid top face of the ink cartridge body for color printers rather than others.

[Claim 13] The ink cartridge according to claim 1 characterized by preparing in one the rib of a large number which make a \*\*\*\* path the shape of zigzag in an air bleed hole at the inside of the above-mentioned lid.

[Claim 14] The ink cartridge according to claim 1 or 13 characterized by making the rib near the air bleed hole with the height which does not contact form among the ribs of a large number prepared in the inside of the above-mentioned lid.

[Claim 15] The ink cartridge according to claim 1 characterized by intercepting the part of the above-mentioned paths formed with this rib while preparing in one the rib of a large number which form a \*\*\*\* path in an air bleed hole at a longitudinal direction at the inside of the above-mentioned lid.

[Claim 16] The ink cartridge according to claim 1 characterized by establishing the slot which prevents scattering of the fluff produced in the case of oscillating joining in the periphery section of the oscillating joining side of the above-mentioned lid.

[Claim 17] The ink cartridge according to claim 1 characterized by preparing a clearance required for oscillating joining between the fields where the above-mentioned ink cartridge body and the above-mentioned lid counter each other.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the ink cartridge used for an ink jet recording apparatus.

[0002]

[Description of the Prior Art] In the printer of the format of performing record writing using liquefied ink, especially an ink jet-type printer, an ink cartridge which these people indicated to JP,5-270001,A, JP,7-125238,A, etc. is used.

[0003] Although this kind of ink cartridge is formed of the polystyrene which usually has moderate firmness and he is trying to fill up ink with the bottom of reduced pressure here When an ink cartridge is saved on the relation through which it is easy to space a steam at a long period of time, polystyrene The viscosity of ink becomes high by evaporation of moisture, worsen the regurgitation from a nozzle, and the problem of spoiling dependability is produced. Moreover, when ink with low surface tension is used in order to make an ink droplet breathe out from a detailed nozzle, in case ink is filled up with the bottom of reduced pressure or a film is stuck, a bubble arises, and un-arranging of making ink blow off from an ink cartridge arises.

[0004]

[Problem(s) to be Solved by the Invention] This invention was made in view of such a problem, and the place made into the purpose is to offer the new ink cartridge which has sufficient rigidity, even if it uses the material of elasticity synthetic resin like scarce polypropylene for firmness, although it is hard to space a steam.

[0005] Moreover, the place made into other purposes of this invention is to offer the new ink cartridge from which ink does not blow off with the bubble produced in the case of being filled up with ink etc.

[0006]

[Means for Solving the Problem] namely, this invention as an ink cartridge for attaining such a technical problem The ridge for reinforcement-cum-positioning is protruded on the peripheral wall corner of the ink cartridge body fabricated with the material of elasticity synthetic resin. And while forming the opening edge thickly, the protruding line which presses the form with which the inside of the lid which closes opening of an ink cartridge body was filled up is protruded on a longitudinal direction, it projects in one and the projected part for \*\* forms which contacts on the outside of this protruding line at the medial surface of the opening edge is formed.

[0007] Moreover, this invention makes the passage and the passage from a vent which reach an air bleed hole in opening of an ink cartridge body on the inside and top face of a wrap lid the shape of the shape of zigzag, and a maze, and it forms passage length so that it may become as long as possible.

[0008]

[Embodiment of the Invention] Then, the example of this invention is explained below. Drawing 1 thru/or drawing 6 show one example of this invention.

[0009] It is the ink cartridge body of an abbreviation rectangular parallelepiped with which the sign 1 formed polypropylene as a material in drawing. By making thickness of the longitudinal direction both-ends walls 2 and 2 thicker than that of the side attachment wall 3 of a cross direction among the peripheral walls of this body 1, and bulging the method of outside and forming the opening edge 4 of upper limit thickly Ridge 6 .... which served both as positioning to the cartridge holder which is made to give sufficient rigidity for this, and is not illustrated to the corner of these end walls 2 and a side attachment wall 3, and the \*\* form of self projects in one, and is formed.

[0010] On the other hand, although the ink feed hopper 10 which makes a cylindrical shape as shown in drawing 2 (a) is projected and formed in the base 8 of this ink cartridge body 1 at that 1 side Project and the ink feed hopper 10 which made the outside with the square case section 12 especially in this example as were shown in drawing 2 (b), and surrounded the inside body 11 is formed. At the same time it abolishes the need of cutting the corner of a film with a press etc., in case the ink feed hopper 10 is closed By using the clearance 13 between a body 11 and a square case section 12 as the roll off of the air at the time of sticking a film, and forming some notches 14 in \*\*\*\* of a square case section 12 further, in case a film is stuck, it is constituted so that internal air can be missed from here to the exterior.

[0011] It is constituted at this ink feed hopper 10 by forming several protruding line 10a for positioning or concave streaks in one towards the wearing direction of a cartridge, and making the section contact per whenever [ of the recording head which corresponds some of this protruding line 10a or the concave streaks ] so that the axial center of this ink feed hopper 10 can be correctly positioned according to an ink supply needle, so that it can respond to the printer of two or more models at that peripheral face.

[0012] In the base 8 of this ink cartridge body 1 Moreover, the engagement crevice 15 which extends in the cross direction of the cartridge body 1 as adjoins the ink feed hopper 10 is formed. While preventing incorrect wearing to a cartridge by making it engage with the strut bar a of the lifter which established this crevice 15 in the cartridge holder While making the step 16 projected to the method of inside by forming this crevice 15 with the part which form 18 does not contact, reducing the ink which is not absorbed by form 18 and enabling it to use ink to the last one drop It is constituted so that the reduced pressure space at the time of the reduced pressure pack by the aluminum pack can also be secured.

[0013] The sign 20 in drawing is the lid which closes opening of the ink cartridge body 1. On the other hand, to the inside of this lid 20 As shown in drawing 3 , the longitudinal ribs 21 and 21 of two trains which press the form 18 held in the interior set spacing. And it is projected and formed with the die length which is extent which can slide a longitudinal direction on a lid 20 a little. By moreover, the strong capillarity obtained by compressing the form 18 of this part more strongly and reducing a hole by making the part of the ink feed hopper 10 approach of these ribs 21 and 21 higher than other parts It is constituted so that the ink in form 18 may be brought together in the part of the ink feed hopper 10. Further inside these longitudinal ribs 21 and 21 And passage is formed in the shape of JIGUZAKU by making an end estrange by turns and setting it up from a longitudinal rib 21. the sense which intersects perpendicularly much transverse-rib 22 .... with a longitudinal direction -- When it decompresses, after separating into ink and air in the process in which the bubble of the ink to produce is led to an air bleed hole 31 through a long path, it is constituted so that only air may be emitted to the exterior.

[0014] Moreover, on the other hand, as shown in drawing 3 , some reinforcing ribs 23 which suppress bending by the way among this part in contact with the medial surface of the opening edge 4 which the cartridge body 1 described above project to the sense which intersects perpendicularly with a longitudinal direction, and are formed in the outside of a longitudinal rib 21. Moreover, as the outside of this reinforcing rib 23 is expanded to drawing 5 and shown, joining SHIRO 5 which protruded on the top face of the opening edge 4, and the joining side 24 to weld are made, and that outside has reached the periphery protruding edge 26 through the rill 25 which stores the fluff at the time of joining further.

[0015] As shown in the top face of this lid 20 at drawing 4 , penetration formation of the ink restoration hole 30 and the air bleed hole 31 is carried out at that center section and the part of ink feed hopper 10 approach. Further on the other hand, in this top face A leader is open for free passage to an air bleed hole 31, and the snake slot 32 where an end makes the through-hole section 33 to a film 35 is formed in the shape of a maze. When in using an ink cartridge peeling of the end of a film 35 is carried out and the inside of the cartridge body 2 is wide opened to atmospheric air through the snake slot 32, it is formed so that it may prevent internal ink evaporating by the long snake slot 32.

[0016] Thus, if a lid 20 is carried on the opening edge 4 of the method thickness of a wrap and opening of the cartridge body 1 is slid on a longitudinal direction in the constituted example The opening edge 4 of the cartridge body 1, without deforming with the reinforcing rib 23 which protruded on the outside of a longitudinal rib 21 Joining of joining SHIRO 5 and the joining side 24 of lid 20 inside which protruded there is carried out, the fluff produced between parentheses is held in the rill 25 of lid 20 inside, and both leave the about 0.2mm clearance delta, and unify.

[0017] Next, ink with small surface tension is poured in into a body 1 from the ink restoration hole 30 prepared in the lid 20. Therefore, subsequently Leaning about 30 degrees of ink cartridges, and holding them so that an air bleed hole 31 may turn up If a film 35 is stuck on the

top face of a lid 20, decompressing, the bubble generated within form 18 While passing along the long passage of the zigzag formed of the transverse rib 22, it dissociates with ink, and only air flows out of an air bleed hole 31 into the top face of a lid 1, and it flows into the through-hole section 33 which touches a film 35 through the snake slot 32 further from here.

[0018] On the other hand, drawing 7 thru/or drawing 10 show the 2nd example of this invention constituted as an ink cartridge for color printers.

[0019] three ink tanks 41c, 41m, and 41y by which this ink cartridge carries out separation hold of each ink of cyanogen, a Magenta, and yellow through septa 43 and 43, and these up opening edges -- a wrap -- single -- it is constituted by the lid 50 of 1.

[0020] The cylinder-like ink feed hoppers 51c, 51m, and 51y project, and are formed, and further, these ink feed hoppers 51c, 51m, and 51y are enclosed by the end of the base 48 of these ink tanks 41c, 41m, and 41y in the periphery with the common frame 52 with which a flat-surface configuration makes stick-shape, after connecting with ribs 55 and 55 mutually.

[0021] Thereby, each ink feed hoppers 51c, 51m, and 51y can be closed to coincidence using the long tape 56, and can miss the air at the time of being the closure from the notch 54 prepared in the upper limb of a frame 52 after making it flow into the air roll off 53 formed in these perimeters, and can make a tape 56 stick certainly.

[0022] In addition, the sign 65 in drawing makes with the part into which form 18 is not contacted, and it enables it to be the common crevice established in these bases 48 as crossed each ink tanks 41c, 41m, and 41y, and to secure the space at the time of the reduced pressure pack by the aluminum pack, while considering as the part which makes a part of cartridge holder stop this part while it reduces the ink which is not absorbed by form 18.

[0023] As shown in drawing 9 , on the other hand to the inside of this lid 50, each ink tank 41c, Longitudinal-rib of several articles 61 .... which presses such forms is projected and formed in every 41m and 41y at a longitudinal direction. And as for these rib 61 ...., the parts of the ink feed hoppers 51c and 51m and 51y approach are formed highly. By being constituted so that press deformation of the form of this part may be carried out more greatly, and making two longitudinal ribs 61 and 61 of these longitudinal-rib 61 .... located in the inner inside run against the ink restoration cylinder 70 The passage 67 formed in the meantime is blockaded, and it is constituted so that a bubble may not flow directly to the air bleed hole 71 established in ink feed hopper 51 approach.

[0024] In addition, the sign 74 in drawing is the rib for \*\* forms which protruded on the sense which intersects perpendicularly with the outside of the longitudinal ribs 61 and 61 of the maximum outside with a longitudinal direction, and it is made for the outer wall 42 of a cartridge not to deform it inside at the time of oscillating joining by making these ribs 74 for \*\* forms contact the outside opening edge of the ink tanks 41c and 41y of both ends.

[0025] As shown in drawing 10 , an end in the top face of a lid 50 On the other hand, each air bleed hole 71c, The snake slots 72c, 72m, and 72y which lead to 71m and 71y are cut in the shape of a maze. Furthermore, after the end of these snake slots 72c, 72m, and 72y is summarized to a piece place, By a film's 75 carrying out peeling of the 73m of the air holes prepared in the end of 72m of snake slots on the Magenta, making a direction project, and forming, it consists of 1 of these air holes 73c, 73m, and 73y, and this example so that \*\*\*\*\* of a film 75 may be made easy.

[0026] The lid 50 of the cartridge which differs in the object for monochrome, the object for colors, or ink capacity is [ how ] scrupulous, and the configuration of these snake slots 72 makes that there is nothing and it is the same. It is constituted so that the snake slot 72 can be covered

with mitigation of the costs of die forming, and the film 75 of the same width. About these snake slots 72 In case a film 75 is welded with a heater chip, the overlap part 76 blocks the snake slot 77, or Or in order to checkmate the snake slot 77 by strong contact in the septum 43 of an ink cartridge, or an outer wall 42 and to prevent that of \*\*\*\*\* Enlarging the width and the depth of a slot 77 of these parts 78, i.e., by enlarging the cross section of the parts 76 and 78, it is constituted so that plugging in the case of joining may be prevented.

[0027] In addition, although the above explains this invention by the example of the ink cartridge which fabricated polypropylene as a material, this invention is applicable also to the ink cartridge fabricated by the elasticity synthetic-resin material of non-moisture permeability like high density polyethylene in addition to this.

[0028]

[Effect of the Invention] As stated above, since the ridge for reinforcement was prepared in the corner of the peripheral wall of an ink tank and the opening edge was formed thickly, according to this invention While there is no permeability and being able to make sufficient rigidity for the ink tank fabricated with a flexible resin material give Since the projected part which suppresses deformation of the opening edge was protruded on the outside of the projected part for form press of a longitudinal direction established in the lid inside, deformation of the tank at the time of oscillating joining can also be prevented without causing particular sliding friction in the case of joining of an ink tank and a base.

[0029] Moreover, it not only makes it possible to close an ink feed hopper simply using a long film that there is no futility, but this frame can protect wearing of a substandard ink tank by having prepared the rectangle-like frame in that perimeter, as the cylinder-like ink feed hopper was surrounded, without cutting a corner.

[0030] Furthermore, since the passage which reaches an air bleed hole was formed in the inside of a base so that it might become as long as possible, even when filling it up with ink with the small surface tension which is easy to produce a bubble by decompressing, it can make it possible to make ink and a gas separate in the process which lets long passage pass, and to discharge only a gas outside effectively, and the dirt of the tank at the time of ink restoration can also be pressed down beforehand.

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## TECHNICAL FIELD

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[Field of the Invention] This invention relates to the ink cartridge used for an ink jet recording apparatus.

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## PRIOR ART

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[Description of the Prior Art] In the printer of the format of performing record writing using liquefied ink, especially an ink jet-type printer, an ink cartridge which these people indicated to JP,5-270001,A, JP,7-125238,A, etc. is used.

[0003] Although this kind of ink cartridge is formed of the polystyrene which usually has moderate firmness and he is trying to fill up ink with the bottom of reduced pressure here When an ink cartridge is saved on the relation through which it is easy to space a steam at a long period



of time, polystyrene The viscosity of ink becomes high by evaporation of moisture, worsen the regurgitation from a nozzle, and the problem of spoiling dependability is produced. Moreover, when ink with low surface tension is used in order to make an ink droplet breathe out from a detailed nozzle, in case ink is filled up with the bottom of reduced pressure or a film is stuck, a bubble arises, and un-arranging of making ink blow off from an ink cartridge arises.

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## EFFECT OF THE INVENTION

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## TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] This invention was made in view of such a problem, and the place made into the purpose is to offer the new ink cartridge which has sufficient rigidity, even if it uses the material of elasticity synthetic resin like scarce polypropylene for firmness, although it is hard to space a steam.

[0005] Moreover, the place made into other purposes of this invention is to offer the new ink cartridge from which ink does not blow off with the bubble produced in the case of being filled up with ink etc.

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## MEANS

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[Means for Solving the Problem] namely, this invention as an ink cartridge for attaining such a technical problem The ridge for reinforcement-cum-positioning is protruded on the peripheral wall corner of the ink cartridge body fabricated with the material of elasticity synthetic resin.

And while forming the opening edge thickly, the protruding line which presses the form with which the inside of the lid which closes opening of an ink cartridge body was filled up is protruded on a longitudinal direction, it projects in one and the projected part for \*\* forms which contacts on the outside of this protruding line at the medial surface of the opening edge is formed.

[0007] Moreover, this invention makes the passage and the passage from a vent which reach an air bleed hole in opening of an ink cartridge body on the inside and top face of a wrap lid the shape of the shape of zigzag, and a maze, and it forms passage length so that it may become as long as possible.

[0008]

[Embodiment of the Invention] Then, the example of this invention is explained below. Drawing 1 thru/or drawing 6 show one example of this invention.

[0009] It is the ink cartridge body of an abbreviation rectangular parallelepiped with which the sign 1 formed polypropylene as a material in drawing. By making thickness of the longitudinal direction both-ends walls 2 and 2 thicker than that of the side attachment wall 3 of a cross direction among the peripheral walls of this body 1, and bulging the method of outside and forming the opening edge 4 of upper limit thickly Ridge 6 .... which served both as positioning to the cartridge holder which is made to give sufficient rigidity for this, and is not illustrated to the corner of these end walls 2 and a side attachment wall 3, and the \*\* form of self projects in one, and is formed.

[0010] On the other hand, although the ink feed hopper 10 which makes a cylindrical shape as shown in drawing 2 (a) is projected and formed in the base 8 of this ink cartridge body 1 at that 1 side Project and the ink feed hopper 10 which made the outside with the square case section 12 especially in this example as were shown in drawing 2 (b), and surrounded the inside body 11 is formed. At the same time it abolishes the need of cutting the corner of a film with a press etc., in case the ink feed hopper 10 is closed By using the clearance 13 between a body 11 and a square case section 12 as the roll off of the air at the time of sticking a film, and forming some notches 14 in \*\*\*\* of a square case section 12 further, in case a film is stuck, it is constituted so that internal air can be missed from here to the exterior.

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[0012] In the base 8 of this ink cartridge body 1 Moreover, the engagement crevice 15 which extends in the cross direction of the cartridge body 1 as adjoins the ink feed hopper 10 is formed. While preventing incorrect wearing to a cartridge by making it engage with the strut bar a of the lifter which established this crevice 15 in the cartridge holder While making the step 16 projected to the method of inside by forming this crevice 15 with the part which form 18 does not contact, reducing the ink which is not absorbed by form 18 and enabling it to use ink to the last one drop It is constituted so that the reduced pressure space at the time of the reduced pressure pack by the aluminum pack can also be secured.

[0013] The sign 20 in drawing is the lid which closes opening of the ink cartridge body 1. On the other hand, to the inside of this lid 20 As shown in drawing 3 , the longitudinal ribs 21 and 21 of two trains which press the form 18 held in the interior set spacing. And it is projected and formed

with the die length which is extent which can slide a longitudinal direction on a lid 20 a little. By moreover, the strong capillarity obtained by compressing the form 18 of this part more strongly and reducing a hole by making the part of the ink feed hopper 10 approach of these ribs 21 and 21 higher than other parts It is constituted so that the ink in form 18 may be brought together in the part of the ink feed hopper 10. Further inside these longitudinal ribs 21 and 21 And passage is formed in the shape of JIGUZAKU by making an end estrange by turns and setting it up from a longitudinal rib 21. the sense which intersects perpendicularly much transverse-rib 22 .... with a longitudinal direction -- When it decompresses, after separating into ink and air in the process in which the bubble of the ink to produce is led to an air bleed hole 31 through a long path, it is constituted so that only air may be emitted to the exterior.

[0014] Moreover, on the other hand, as shown in drawing 3 , some reinforcing ribs 23 which suppress bending by the way among this part in contact with the medial surface of the opening edge 4 which the cartridge body 1 described above project to the sense which intersects perpendicularly with a longitudinal direction, and are formed in the outside of a longitudinal rib 21. Moreover, as the outside of this reinforcing rib 23 is expanded to drawing 5 and shown, joining SHIRO 5 which protruded on the top face of the opening edge 4, and the joining side 24 to weld are made, and that outside has reached the periphery protruding edge 26 through the rill 25 which stores the fluff at the time of joining further.

[0015] As shown in the top face of this lid 20 at drawing 4 , penetration formation of the ink restoration hole 30 and the air bleed hole 31 is carried out at that center section and the part of ink feed hopper 10 approach. Further on the other hand, in this top face A leader is open for free passage to an air bleed hole 31, and the snake slot 32 where an end makes the through-hole section 33 to a film 35 is formed in the shape of a maze. When in using an ink cartridge peeling of the end of a film 35 is carried out and the inside of the cartridge body 2 is wide opened to atmospheric air through the snake slot 32, it is formed so that it may prevent internal ink evaporating by the long snake slot 32.

[0016] Thus, if a lid 20 is carried on the opening edge 4 of the method thickness of a wrap and opening of the cartridge body 1 is slid on a longitudinal direction in the constituted example The opening edge 4 of the cartridge body 1, without deforming with the reinforcing rib 23 which protruded on the outside of a longitudinal rib 21 Joining of joining SHIRO 5 and the joining side 24 of lid 20 inside which protruded there is carried out, the fluff produced between parentheses is held in the rill 25 of lid 20 inside, and both leave the about 0.2mm clearance delta, and unify.

[0017] Next, ink with small surface tension is poured in into a body 1 from the ink restoration hole 30 prepared in the lid 20. Therefore, subsequently Leaning about 30 degrees of ink cartridges, and holding them so that an air bleed hole 31 may turn up If a film 35 is stuck on the top face of a lid 20, decompressing, the bubble generated within form 18 While passing along the long passage of the zigzag formed of the transverse rib 22, it dissociates with ink, and only air flows out of an air bleed hole 31 into the top face of a lid 1, and it flows into the through-hole section 33 which touches a film 35 through the snake slot 32 further from here.

[0018] On the other hand, drawing 7 thru/or drawing 10 show the 2nd example of this invention constituted as an ink cartridge for color printers.

[0019] three ink tanks 41c, 41m, and 41y by which this ink cartridge carries out separation hold of each ink of cyanogen, a Magenta, and yellow through septa 43 and 43, and these up opening edges -- a wrap -- single -- it is constituted by the lid 50 of 1.

[0020] The cylinder-like ink feed hoppers 51c, 51m, and 51y project, and are formed, and further, these ink feed hoppers 51c, 51m, and 51y are enclosed by the end of the base 48 of these

ink tanks 41c, 41m, and 41y in the periphery with the common frame 52 with which a flat-surface configuration makes stick-shape, after connecting with ribs 55 and 55 mutually.

[0021] Thereby, each ink feed hoppers 51c, 51m, and 51y can be closed to coincidence using the long tape 56, and can miss the air at the time of being the closure from the notch 54 prepared in the upper limb of a frame 52 after making it flow into the air roll off 53 formed in these perimeters, and can make a tape 56 stick certainly.

[0022] In addition, the sign 65 in drawing makes with the part into which form 18 is not contacted, and it enables it to be the common crevice established in these bases 48 as crossed each ink tanks 41c, 41m, and 41y, and to secure the space at the time of the reduced pressure pack by the aluminum pack, while considering as the part which makes a part of cartridge holder stop this part while it reduces the ink which is not absorbed by form 18.

[0023] As shown in drawing 9, on the other hand to the inside of this lid 50, each ink tank 41c, Longitudinal-rib of several articles 61 .... which presses such forms is projected and formed in every 41m and 41y at a longitudinal direction. And as for these rib 61 ....., the parts of the ink feed hoppers 51c and 51m and 51y approach are formed highly. By being constituted so that press deformation of the form of this part may be carried out more greatly, and making two longitudinal ribs 61 and 61 of these longitudinal-rib 61 .... located in the inner inside run against the ink restoration cylinder 70 The passage 67 formed in the meantime is blockaded, and it is constituted so that a bubble may not flow directly to the air bleed hole 71 established in ink feed hopper 51 approach.

[0024] In addition, the sign 74 in drawing is the rib for \*\* forms which protruded on the sense which intersects perpendicularly with the outside of the longitudinal ribs 61 and 61 of the maximum outside with a longitudinal direction, and it is made for the outer wall 42 of a cartridge not to deform it inside at the time of oscillating joining by making these ribs 74 for \*\* forms contact the outside opening edge of the ink tanks 41c and 41y of both ends.

[0025] As shown in drawing 10, an end in the top face of a lid 50 On the other hand, each air bleed hole 71c, The snake slots 72c, 72m, and 72y which lead to 71m and 71y are cut in the shape of a maze. Furthermore, after the end of these snake slots 72c, 72m, and 72y is summarized to a piece place, By a film's 75 carrying out peeling of the 73m of the air holes prepared in the end of 72m of snake slots on the Magenta, making a direction project, and forming, it consists of 1 of these air holes 73c, 73m, and 73y, and this example so that \*\*\*\*\* of a film 75 may be made easy.

[0026] The lid 50 of the cartridge which differs in the object for monochrome, the object for colors, or ink capacity is [ how ] scrupulous, and the configuration of these snake slots 72 makes that there is nothing and it is the same. It is constituted so that the snake slot 72 can be covered with mitigation of the costs of die forming, and the film 75 of the same width. About these snake slots 72 In case a film 75 is welded with a heater chip, the overlap part 76 blocks the snake slot 77, or Or in order to checkmate the snake slot 77 by strong contact in the septum 43 of an ink cartridge, or an outer wall 42 and to prevent that of \*\*\*\*\* Enlarging the width and the depth of a slot 77 of these parts 78, i.e., by enlarging the cross section of the parts 76 and 78, it is constituted so that plugging in the case of joining may be prevented.

[0027] In addition, although the above explains this invention by the example of the ink cartridge which fabricated polypropylene as a material, this invention is applicable also to the ink cartridge fabricated by the elasticity synthetic-resin material of non-moisture permeability like high density polyethylene in addition to this.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the sectional view of an ink cartridge showing one example of this invention.

[Drawing 2] (a) and (b) are the bottom views having shown each example of a cartridge same as the above.

[Drawing 3] (a) and (b) are drawings having shown the inside and cross section of a lid same as the above.

[Drawing 4] It is the plan of a lid same as the above.

[Drawing 5] It is the expanded sectional view having shown the cartridge same as the above and the important section of a lid.

[Drawing 6] It is the perspective view having shown the whole picture of a cartridge same as the above.

[Drawing 7] It is the perspective view having shown other \*\*\*\*\* of this invention constituted as an ink cartridge for color printers.

[Drawing 8] It is the bottom view of a cartridge same as the above.

[Drawing 9] (a) and (b) are drawings having shown the inside and cross section of a lid same as the above.

[Drawing 10] It is the plan of a lid same as the above.

[Description of Notations]

1 Ink Cartridge

4 Thick Opening Edge

6 Ridge

12 Rectangular Frame

15 Engagement Crevice

20 Lid

21 Longitudinal Rib

23 \*\* Form Rib

30 Ink Restoration Hole

31 Air Bleed Hole

32 Snake Slot

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## CORRECTION OR AMENDMENT

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[Procedure amendment 1]

[Document to be Amended] Specification

[Item(s) to be Amended] Claim

[Method of Amendment] Modification

[Proposed Amendment]

[Claim(s)]

[Claim 1] In the ink cartridge which consists of the ink cartridge body which offered the ink feed hopper which supplies ink on the recording head, form held in said ink cartridge body, and a lid which forms the ink hold room in which opening of said ink cartridge body is closed and said form is held,

The ink cartridge which the end followed said protruding line at said opening side of the protruding line which presses said form to the inside of said lid, and is prolonged inside at the longitudinal direction of said ink hold room, and said protruding line, and formed the protruding line for the \*\* forms with which the other end holds the configuration of said ink cartridge body in contact with the medial surface of said opening.

[Claim 2] In the ink cartridge which consists of the ink cartridge body which offered the ink feed hopper which supplies ink on the recording head, form held in said ink cartridge body, and a lid which forms the ink hold room in which opening of said ink cartridge body is closed and said form is held,

The ink cartridge which has the maze-like slot which connects by the through tube which has the protruding line to which said lid presses said form at the rear face, and extends at it at the longitudinal direction of said ink hold room, and a protruding line for the \*\* forms with which an end follows said protruding line at said opening side of said protruding line, and the other end holds the configuration of said ink cartridge body in contact with the medial surface of said opening, and is open for free passage on a front face at said ink hold room, and the end.

[Claim 3] In the ink cartridge which consists of the ink cartridge body which offered the ink feed hopper which supplies ink on the recording head, form held in said ink cartridge body, and a lid which forms the ink hold room in which opening of said ink cartridge body is closed and said form is held,

The ink cartridge which formed at least one through tube among said two or more 1st protruding lines while forming two or more 1st protruding lines which press said form to the inside of said lid, and are prolonged inside at the longitudinal direction of said ink hold room.

[Claim 4] The ink cartridge according to claim 3 by which the cylinder upper part where an end is prolonged in said form is formed in one of said the through tubes.

[Claim 5] The ink cartridge according to claim 3 on which said through tube functions as an ink restoration hole or an air bleed hole.

[Claim 6] The ink cartridge according to claim 3 by which the slot of the shape of a maze which is open for free passage to said through tube is cut in the front face of said lid.

[Claim 7] The ink cartridge according to claim 3 in which two or more 2nd protruding lines which only an end connects to each of said 1st protruding line by turns so that the field as for which said 1st protruding line carries out phase opposite may be divided the shape of zigzag and in the shape of a maze are formed.

[Claim 8] The ink cartridge according to claim 3 currently formed so that the tip by the side of said ink hold room of said 2nd protruding line may touch said form.

[Procedure amendment 2]

[Document to be Amended] Specification

[Item(s) to be Amended] 0006

[Method of Amendment] Modification

[Proposed Amendment]

[0006]

[Means for Solving the Problem] This invention as an ink cartridge for solving such a technical problem namely, invention of claim 1 The ink cartridge body which offered the ink feed hopper which supplies ink on the recording head, In the ink cartridge which consists of form held in said ink cartridge body, and a lid which forms the ink hold room in which opening of said ink cartridge body is closed and said form is held The protruding line which presses said form to the inside of said lid, and is prolonged inside at the longitudinal direction of said ink hold room, An end follows said protruding line and the other end forms in said opening side of said protruding line the protruding line for \*\* forms which holds the configuration of said ink cartridge body in contact with the medial surface of said opening. Moreover, the ink cartridge body with which invention of claim 2 offered the ink feed hopper which supplies ink on the recording head, In the ink cartridge which consists of form held in said ink cartridge body, and a lid which forms the ink hold room in which opening of said ink cartridge body is closed and said form is held The protruding line to which said lid presses said form at the rear face, and extends at it at the longitudinal direction of said ink hold room, An end follows said protruding line at said opening side of said protruding line, and it has a protruding line for the \*\* forms with which the other end holds the configuration of said ink cartridge body in contact with the medial surface of said opening. Moreover, it is made to have the maze-like slot which connects with a front face by the through tube which is open for free passage in said ink hold room, and the end. These invention can secure the rigidity of a cartridge body by the protruding line for \*\* forms formed in the lid.

[Procedure amendment 3]

[Document to be Amended] Specification

[Item(s) to be Amended] 0007

[Method of Amendment] Modification

[Proposed Amendment]

[0007] Moreover, the ink cartridge body with which invention of claim 3 offered the ink feed hopper which supplies ink on the recording head, In the ink cartridge which consists of form held in said ink cartridge body, and a lid which forms the ink hold room in which opening of said ink cartridge body is closed and said form is held While forming two or more 1st protruding lines which press said form to the inside of said lid, and are prolonged inside at the longitudinal direction of said ink hold room At least one through tube is formed among said two or more 1st protruding lines, form is stuffed into a back side rather than a lid by the 1st protruding line, it prevents and has that a through tube is blocked by form, and jet of the ink at the time of

restoration of ink is prevented.

[Procedure amendment 4]

[Document to be Amended] Specification

[Item(s) to be Amended] 0028

[Method of Amendment] Modification

[Proposed Amendment]

[0028]

[Effect of the Invention] As explained above, according to invention of claims 1 and 2 of this invention, the rigidity of a cartridge body is securable with the protruding line for \*\* forms formed in the lid. Moreover, according to invention of claim 3, form can be stuffed into a back side rather than a lid by the 1st protruding line, space can be secured between a through tube and form, and jet of the ink at the time of restoration of ink can be prevented.

[Procedure amendment 5]

[Document to be Amended] Specification

[Item(s) to be Amended] 0029

[Method of Amendment] Deletion

[Procedure amendment 6]

[Document to be Amended] Specification

[Item(s) to be Amended] 0030

[Method of Amendment] Deletion



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(71)出願人 000002369

セイコーエプソン株式会社

東京都新宿区西新宿2丁目4番1号

(72)発明者 小林 隆男

長野県諏訪市大和3丁目3番5号 セイコ  
ーエプソン株式会社内

(72)発明者 宮澤 久

長野県諏訪市大和3丁目3番5号 セイコーエプソン株式会社内

(72)発明者 小池 尚志

長野県諏訪市大和3丁目3番5号 セイコ  
ーエプソン株式会社内

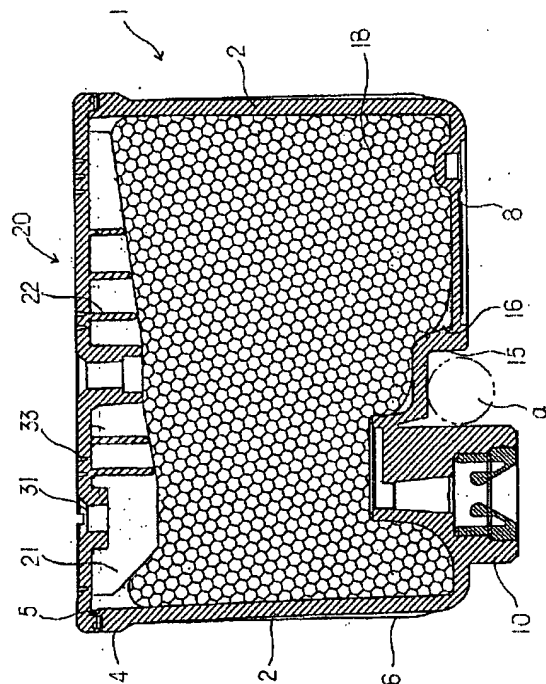
(74)代理人 弁理士 西川 慶治 (外1名)

(54) 【発明の名称】 インクカートリッジ

(57) 【要約】

【課題】 軟質の樹脂素材により剛性を有するインクタンクを形成すること。

【解決手段】 周壁 2 の角部に補強用の隆条 6 を突設し、かつ開口端縁 4 を肉厚にすることにより、通気性はないが柔軟なポリプロピレンによって十分な剛性を有するインクカートリッジを成形可能とし、さらに、蓋体 20 内面の縦リブ 21 の外側に保形用のリブを突設することにより、振動溶接の際のカートリッジ 1 の変形をも抑え得るようにしたもの。



【特許請求の範囲】

【請求項1】 軟質の合成樹脂素材により成形したインクカートリッジ本体の周壁角部に補強兼位置決め用の隆条を突設し、かつ開口端縁を肉厚に形成する一方、上記インクカートリッジ本体の開口部を封止する蓋体の内面に、充填したフォームを押圧する突条を長手方向に突設して、該突条の外側に上記開口端縁の内側面に当接する保形用の突部を一体的に突出形成したことを特徴とするインクカートリッジ。

【請求項2】 上記インクカートリッジ本体をポリプロピレンにより形成したことを特徴とする請求項1記載のインクカートリッジ。

【請求項3】 上記インクカートリッジ本体の溶接時の振動方向と直交する向きの周壁面の肉厚を他の周壁面の肉厚よりも厚く形成したことを特徴とする請求項1記載のインクカートリッジ。

【請求項4】 上記インクカートリッジ本体の底面に突設したインク供給部の外周面に、少なくとも1本の位置決め用の隆条を該インクカートリッジ本体の装着方向に向けて一体的に形成したことを特徴とする請求項1記載のインクカートリッジ。

【請求項5】 上記インクカートリッジ本体の底面に突設した円筒状のインク供給部を囲うようにしてその周囲に、方形状をなす枠を一体的に形成したことを特徴とする請求項1記載のインクカートリッジ。

【請求項6】 カラープリンタ用インクカートリッジの底面に突設した各インク供給部を互いにリブで結合するとともに、該各インク供給部を囲うようにしてその周囲に、長方形形状をなす枠を一体的に形成したことを特徴とする請求項1または5記載のインクカートリッジ。

【請求項7】 上記枠の縁に、フィルムを貼着する際に空気を逃がす切欠き部を形成したことを特徴とする請求項1または5記載のインクカートリッジ。

【請求項8】 インク供給部に近接させて上記インクカートリッジ本体の底面に、長手方向と直交する向きの凹部を形成したことを特徴とする請求項1記載のインクカートリッジ。

【請求項9】 上記蓋体の上面に、一端が空気抜き孔と連通する迷路状の溝を凹設したことを特徴とする請求項1記載のインクカートリッジ。

【請求項10】 上記迷路状の溝のうち、フィルム溶着用ヒータチップのオーバーラップ部分の溝の断面を大きくしたことを特徴とする請求項1または9記載のインクカートリッジ。

【請求項11】 上記蓋体の上面に設ける迷路状の溝を、インク容量を異にする各種のインクカートリッジ本体に適応する蓋体の全てに共通な形状となしたことを特徴とする請求項1または9記載のインクカートリッジ。

【請求項12】 カラープリンタ用インクカートリッジ本体の蓋体上面に設ける上記迷路状の各溝の末端排出孔

のうち、その1つを、上記蓋体を覆うフィルムの剥離方向に向けて他よりも突出位置させたことを特徴とする請求項1記載のインクカートリッジ。

【請求項13】 上記蓋体の内面に、空気抜き孔に致る通路をジグザグ状にする多数のリブを一体的に設けたことを特徴とする請求項1記載のインクカートリッジ。

【請求項14】 上記蓋体の内面に設ける多数のリブのうち、空気抜き孔近傍のリブをフォームに接触しない高さとなしたことを特徴とする請求項1または13記載のインクカートリッジ。

【請求項15】 上記蓋体の内面に、空気抜き孔に致る通路を形成する多数のリブを長手方向に一体的に設けるとともに、該リブにより形成される上記通路のうちの一部を遮断したことを特徴とする請求項1記載のインクカートリッジ。

【請求項16】 上記蓋体の振動溶着面の外周部に、振動溶着の際に生じるケバの飛散を防ぐ溝を設けたことを特徴とする請求項1記載のインクカートリッジ。

【請求項17】 上記インクカートリッジ本体と上記蓋体とが対向し合う面の間に、振動溶着に必要な隙間を設けたことを特徴とする請求項1記載のインクカートリッジ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、インクジェット記録装置に用いるインクカートリッジに関する。

【0002】

【従来の技術】液状のインクを用いて記録書込みを行う形式のプリンタ、特にインクジェット式のプリンタにおいては、本出願人が特開平5-270001号公報や特開平7-125238号公報等に開示したようなインクカートリッジが用いられる。

【0003】この種のインクカートリッジは、通常、適度の保形性を有するポリスチレンにより形成されているが、ここにインクを減圧下で充填するようにしているが、ポリスチレンは水蒸気を透し易い関係上、インクカートリッジを長期に保存しておいた場合には、水分の蒸発によりインクの粘性が高くなってノズルからの吐出が悪くして信頼性を損ねるといった問題を生じさせ、また、微細なノズルからインク滴を吐出させるべく表面張力の低いインクを用いた場合には、減圧下でインクを充填したりフィルムを貼着する際に泡が生じて、インクカートリッジからインクを噴き出してしまうといった不都合が生じる。

【0004】

【発明が解決しようとする課題】本発明はこのような問題に鑑みてなされたもので、その目的とするところは、水蒸気を透し難いが保形性に乏しいポリプロピレンのような軟質合成樹脂の素材を用いても、十分な剛性を有する新たなインクカートリッジを提供することにある。

【0005】また、本発明の他の目的とするところは、インクを充填するなどの際に生じる泡によってインクが噴き出すことのない新たなインクカートリッジを提供することにある。

【0006】

【課題を解決するための手段】すなわち、本発明はこのような課題を達成するためのインクカートリッジとして、軟質合成樹脂の素材により成形したインクカートリッジ本体の周壁角部に補強兼位置決め用の隆条を突設し、かつ開口端縁を肉厚に形成する一方、インクカートリッジ本体の開口部を封止する蓋体の内面に、充填したフォームを押圧する突条を長手方向に突設して、この突条の外側に開口端縁の内側面に当接する保形用の突部を一体的に突出形成するようにしたものである。

【0007】また、本発明は、インクカートリッジ本体の開口部を覆う蓋体の内面及び上面に、空気抜き孔に至る流路と空気孔からの流路をジグザグ状もしくは迷路状にして、流路長を可能な限り長くなるよう形成したものである。

【0008】

【発明の実施の形態】そこで以下に本発明の実施例について説明する。図1乃至図6は、本発明の一実施例を示したものである。

【0009】図において符号1は、ポリプロピレンを素材として形成した略直方体のインクカートリッジ本体で、この本体1の周壁のうち、長手方向両端壁2、2の肉厚を巾方向の側壁3のそれよりも厚くし、かつ上端の開口縁4を外方に膨出させて肉厚に形成することにより、これに十分な剛性を付与させたものであり、また、これら端壁2及び側壁3の角部には、図示しないカートリッジホルダへの位置決めと、自己の保形とを兼ねた隆条6……が一体的に突出形成されている。

【0010】一方、このインクカートリッジ本体1の底面8には、その一侧に、図2(a)に示したような円筒形をなすインク供給口10が突出形成されるが、特にこの実施例においては、図2(b)に示したように、内側の円筒部11を囲むようにして外側を角筒部12となしたインク供給口10を突出形成し、インク供給口10を封止する際にプレス等によってフィルムの隅部をカットする必要をなくすと同時に、円筒部11と角筒部12との隙間13をフィルムを貼着する際の空気の逃げ部とし、さらに、角筒部12の頂縁に幾つかの切欠き14を設けることによって、フィルムを貼着する際に内部の空気をここから外部へ逃がすことができるように構成されている。

【0011】このインク供給口10には、その外周面に、複数の機種のパリントに対応できるように数本の位置決め用の突条10aもしくは凹条がカートリッジの装着方向に向けて一体的に形成され、この突条10aもしくは凹条のうちの幾つかを対応する記録ヘッドの度当り

部に当接させることにより、このインク供給口10の軸心を正しくインク供給針に合せて位置決めすることができるよう構成されている。

【0012】このインクカートリッジ本体1の底面8には、また、インク供給口10に隣接するようにしてカートリッジ本体1の巾方向に延びる係合凹部15が形成され、この凹部15をカートリッジホルダに設けたリフタの支杆aに係合させることによりカートリッジへの誤装着を防ぐとともに、この凹部15を設けることによって内方に突出した段部16をフォーム18が接触しない部分となして、フォーム18に吸収されないインクを減らし、インクを最後の1滴まで使用し得るようにするとともに、アルミバックによる減圧バック時の減圧空間をも確保することができるように構成されている。

【0013】これに対して、図中符号20はインクカートリッジ本体1の開口部を封止する蓋体で、この蓋体20の内面には、図3に示したように、内部に収容したフォーム18を押圧する2列の縦リブ21、21が間隔をおいて、かつ蓋体20を長手方向に若干摺動させることができる程度の長さをもって突出形成され、また、これらのリブ21、21のインク供給口10寄りの部分を他の部分よりも高くすることによってこの部分のフォーム18をより強く圧縮し、空孔を縮小することによって得られる強い毛细管作用により、フォーム18内のインクをインク供給口10の部分に集めるように構成され、さらに、これらの縦リブ21、21の内側には、多数の横リブ22……を長手方向と直交する向きに、かつ一端を縦リブ21から交互に離間させて立設することにより流路をジグザク状に形成し、減圧した際に生じるインクの泡を、長い経路を経て空気抜き孔31へ導く過程でインクと空気とに分離した上、空気のみを外部へ放出するように構成されている。

【0014】また一方、縦リブ21の外側には、図3に示したように、カートリッジ本体1の上記した開口縁4の内側面に接してこの部分の内方への撓みを抑える幾つかの補強リブ23が長手方向と直交する向きに突出形成され、また、この補強リブ23の外側は、図5に拡大して示したように、開口縁4の頂面に突設した溶着シロ5と溶着する溶着面24をなして、さらにその外側は、溶着時のケバを収める細溝25を介して外周突縁26に達している。

【0015】他方、この蓋体20の上面には、図4に示したように、その中央部とインク供給口10寄りの部分にインク充填孔30と空気抜き孔31が貫通形成され、さらに、この上面には、始端部が空気抜き孔31に連通し、末端がフィルム35への通孔部33をなすへび溝32が迷路状に形成されていて、インクカートリッジを使用するに当たってフィルム35の末端を引剥し、へび溝32を介してカートリッジ本体2内を大気に開放した際に、長いへび溝32によって内部のインクが蒸発するの

を防ぐように形成されている。

【0016】このように構成された実施例において、カートリッジ本体1の開口部を覆うよう肉厚の開口縁4の上に蓋体20を載せて長手方向に摺動させると、カートリッジ本体1の開口縁4は、縦リブ21の外側に突設した補強リブ23により変形することなく、そこに突設した溶着シロ5と蓋体20内面の溶着面24とを溶着させ、かつこの間に生じたケバを蓋体20内面の細溝25に収容して、両者は、例えば0.2mm程度の隙間6を残して一体化する。

【0017】したがって、つぎに、表面張力の小さなインクを蓋体20に設けたインク充填孔30から本体1内に注入し、ついで、空気抜き孔31が上になるようにインクカートリッジを30°程度傾けて保持しつつ、減圧しながら蓋体20の上面にフィルム35を貼着してゆくと、フォーム18内で発生した泡は、横リブ22により形成されたジグザグの長い流路を通る間にインクと分離し、空気のみが空気抜き孔31から蓋体1の上面に流出し、ここからさらにへび溝32を通過してフィルム35と接する通孔部33へと流れ出る。

【0018】これに対して、図7乃至図10は、カラープリンタ用のインクカートリッジとして構成した本発明の第2の実施例を示したものである。

【0019】このインクカートリッジは、隔壁43、43を介してシアン、マゼンタ、イエローの各インクを分離収容する3つのインクタンク41c、41m、41yと、これらの上部開口端を覆う単1の蓋体50とによって構成されている。

【0020】これらのインクタンク41c、41m、41yの底面48の一端には、円筒状のインク供給口51c、51m、51yが突出形成され、さらに、これらのインク供給口51c、51m、51yは互いにリブ55、55で接続された上、外周を平面形状が短冊型をなす共通の枠52により囲われている。

【0021】これにより、各インク供給口51c、51m、51yは長尺のテープ56を用いて同時に封止することができ、また、封止の際の空気は、これらの周囲に形成された空気逃げ部53の中に流入させた上、枠52の上縁に設けた切欠き54から逃がして、テープ56を確実に貼着させることができる。

【0022】なお、図中符号65は、各インクタンク41c、41m、41yを横切るようにしてこれらの底面48に設けた共通の凹部で、この部分をカートリッジホルダの一部に係止させる部分とする一方、フォーム18を接触させない部分となして、フォーム18に吸収されないインクを減らすとともに、アルミパックによる減圧パック時の空間を確保することができるようになっている。

【0023】一方、この蓋体50の内面には、図9に示したように、各インクタンク41c、41m、41y毎

にこれらのフォームを押圧する数条の縦リブ61……が長手方向に突出形成され、かつこれらのリブ61……はインク供給口51c、51m、51y寄りの部分が高く形成されていて、この部分のフォームをより大きく押圧変形させるように構成され、また、これらの縦リブ61……のうちの内側に位置する2本の縦リブ61、61をインク充填筒70に突き当らせることにより、この間に形成される流路67を閉塞して、インク供給口51寄りに設けた空気抜き孔71へ泡が直接流れてゆかないように構成されている。

【0024】なお図中符号74は、最外側の縦リブ61、61の外側に長手方向と直交する向きに突設した保形用のリブで、これらの保形用リブ74を両端のインクタンク41c、41yの外側開口縁に当接させることにより、振動溶着時にカートリッジの外壁42が内側に変形しないようにしたものである。

【0025】これに対して蓋体50の上面には、図10に示したように、一端が各空気抜き孔71c、71m、71yに通じるへび溝72c、72m、72yが迷路状に凹設され、さらに、これらのへび溝72c、72m、72yの末端は一個所にまとめられた上、これらの通気孔73c、73m、73yのうちの1つ、この実施例ではマゼンタのへび溝72mの末端に設けた通気孔73mをフィルム75の引剥し方向に突出させて形成することにより、フィルム75の引剥しを容易にするように構成されている。

【0026】これらのへび溝72の形状は、モノクロ用、カラー用あるいはインク容量を異にするカートリッジの蓋体50の如何に拘りなく同じとなして、型成形の費用の軽減と、同じ巾のフィルム75によりへび溝72を覆えることができるように構成され、また、これらのへび溝72については、フィルム75をヒーターチップにより溶着する際に、そのオーバーラップ部分76でへび溝77を詰まらせたり、あるいは、インクカートリッジの隔壁43や外壁42との強い接触によりへび溝77を詰まらせたりするのを防ぐために、これらの部分78の溝77の巾や深さを大きくすること、つまりその部分76、78の断面積を大きくすることによって、溶着の際の詰まりを防ぐように構成されている。

【0027】なお、以上はポリプロピレンを素材として成形したインクカートリッジの例によって本発明を説明したものであるが、これ以外に、高密度ポリエチレンのような不透湿性の軟質合成樹脂材により成形するインクカートリッジにも本発明を適用することができる。

【0028】

【発明の効果】以上述べたように本発明によれば、インクタンクの周壁の角部に補強用の隆条を設け、かつ開口端縁を肉厚に形成したので、通気性がない反面、柔軟な樹脂素材により成形するインクタンクに十分な剛性を付与させることができるとともに、蓋体内面に設けた長手

方向のフォーム押圧用突部の外側に、開口端縁の変形を抑える突部を突設したので、インクタンクと基体との溶着の際にさしたる摺動抵抗をきたすことなく振動溶着時のタンクの変形をも未然に防ぐことができる。

【0029】また、円筒状のインク供給口を取り囲むようにしてその周囲に方形状の枠を設けたことにより、隅部をカットすることなく長尺のフィルムを用いてインク供給口を無駄なく、かつ簡単に封止することを可能とするばかりでなく、この枠により規格外のインクタンクの装着をも未然に防ぐことができる。

【0030】さらに、基体の内面に、空気抜き孔に至る流路を可能な限り長くなるように形成したので、減圧することによって泡を生じ易い表面張力の小さなインクを充填するような場合でも、長い流路を通す過程でインクと気体とを分離させて気体のみを外部に効果的に排出することを可能とし、インク充填時のタンクの汚れをも未然に抑えることができる。

【図面の簡単な説明】

【図1】本発明の一実施例を示すインクカートリッジの断面図である。

【図2】(a) (b) は同上カートリッジの各実施例を示した底面図である。

【図3】(a) (b) は同上蓋体の内面とその断面を示した図である。

【図4】同上蓋体の上面図である。

【図5】同上カートリッジと蓋体の要部を示した拡大断面図である。

【図6】同上カートリッジの全容を示した斜視図である。

【図7】カラープリンタ用のインクカートリッジとして構成した本発明の他の実施例を示した斜視図である。

【図8】同上カートリッジの底面図である。

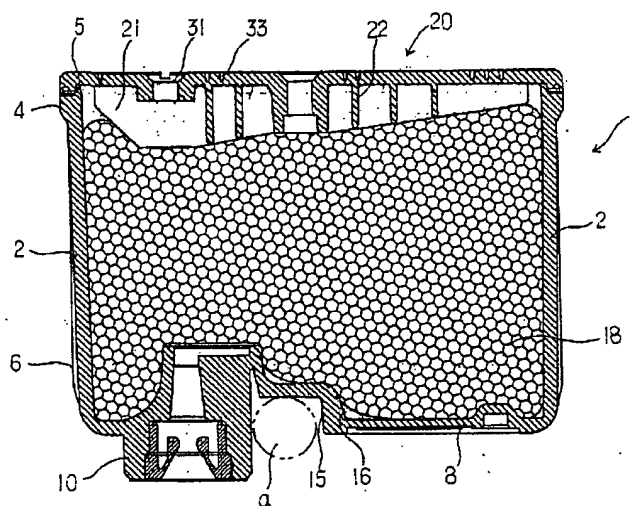
【図9】(a) (b) は同上蓋体の内面と断面を示した図である。

【図10】同上蓋体の上面図である。

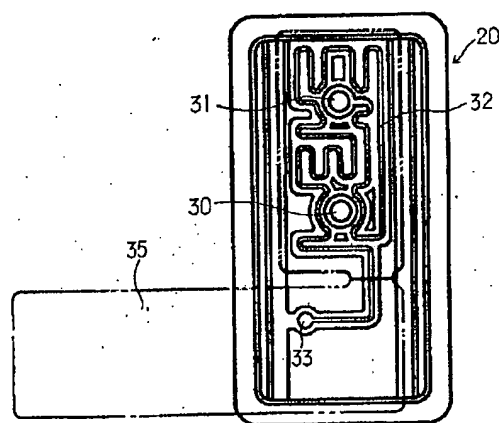
【符号の説明】

- 1 インクカートリッジ
- 4 肉厚の開口端縁
- 6 隆条
- 12 方形の枠
- 15 係合凹部
- 20 蓋体
- 21 縦リブ
- 23 保形リブ
- 30 インク充填孔
- 31 空気抜き孔
- 32 へび溝

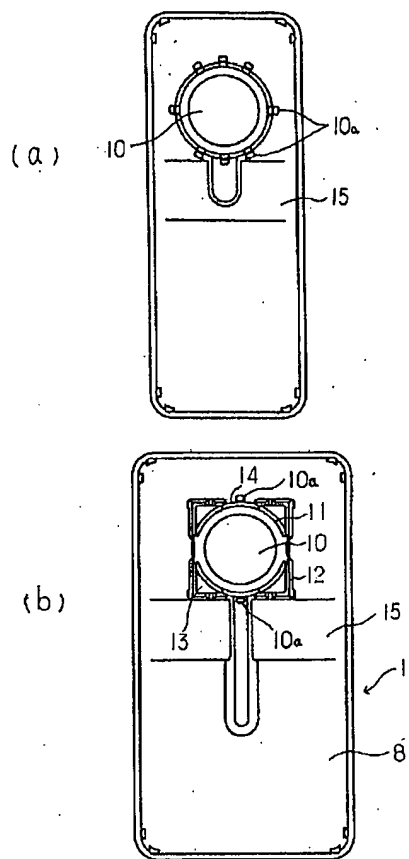
【図1】



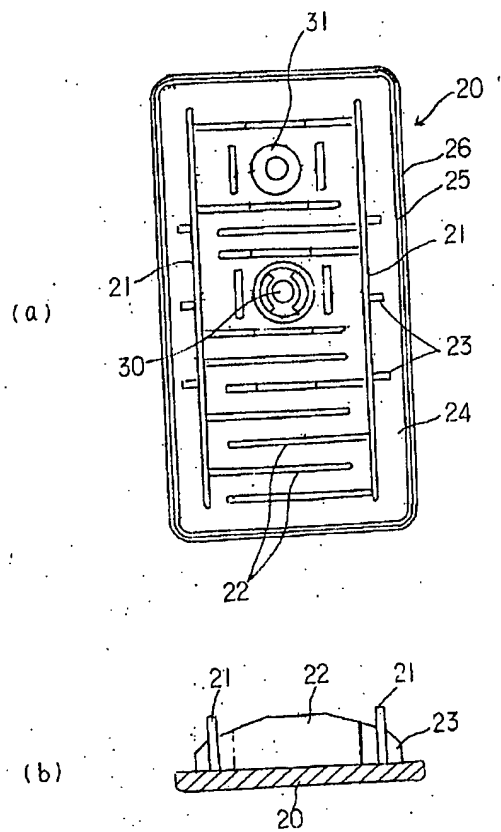
【図4】



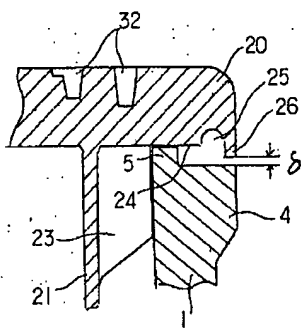
【図2】



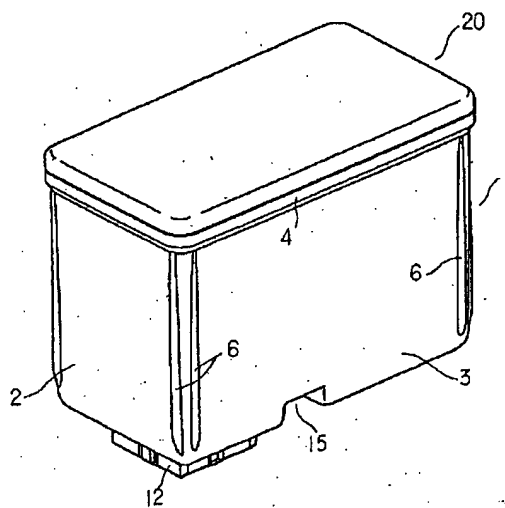
【図3】



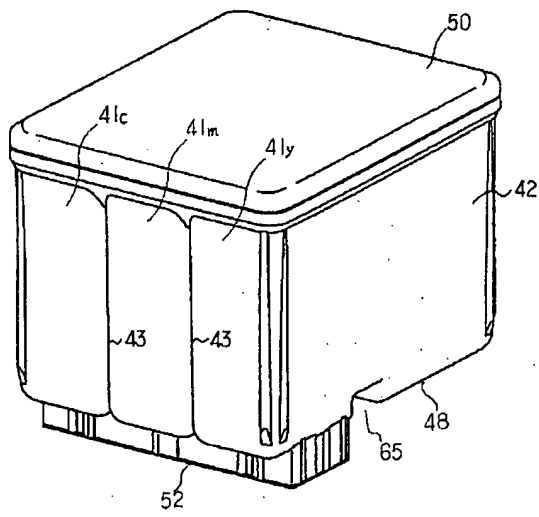
【図5】



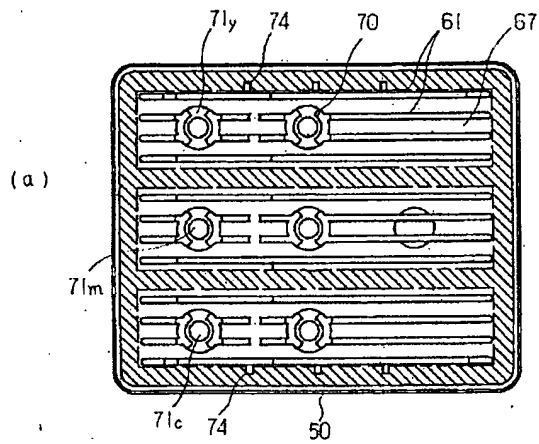
【図6】



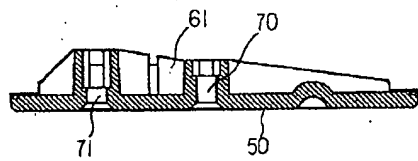
【図 7】



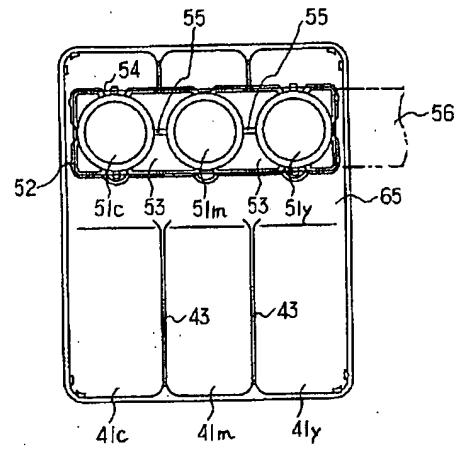
【図 9】



(b)



【図 8】



【図 10】

